

REMARKS/ARGUMENTS

In the Office action dated December 28, 2004, claims 1 – 6, 8 – 17, 19 and 20 were rejected. Applicants have amended independent claims 1 and 8 and canceled claims 2, 3, and 9 – 11 and hereby request reconsideration of the application in view of the amended claims and the below-provided remarks.

I. Claim Rejections under 35 U.S.C. 112

Claims 2, 3, and 9 – 11 were rejected under 35 U.S.C. 112, second paragraph. Claims 2, 3, and 9 – 11 have been canceled and therefore the rejection is rendered moot.

II. Claim Rejections under 35 U.S.C. 103**Claim 1**

Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wetherell (U.S. Pat. No. 4,723,315) in view of Aoki (U.S. Pat. No. 6,542,298). The Office action states that Wetherell teaches all elements of claim 1 except that “Wetherell does not teach a planar PBS” (polarizing beam splitter). The Office action cites Aoki as teaching a planar PBS.

Claim 1 has been amended to recite “a polarization rotator attached to said first output of said planar waveguide optical coupler” and “a polarizing beam splitter attached to said polarization rotator.” (emphasis added) The amendments to claim 1 specify certain elements as being “attached to” each other as opposed to “directly adjacent to” each other as previously claimed. Support for the amendments is provided in Fig. 7 of the specification and at page 9, lines 7 – 20 and page 14, lines 5 – 12. As amended claim 1 recites:

“a planar waveguide optical coupler for combining an input signal and a local oscillator signal into a combined optical signal, said planar waveguide optical coupler having a first output for outputting a first beam of said combined optical signal;
a polarization rotator attached to said first output of said planar waveguide optical coupler;
a polarizing beam splitter attached to said polarization rotator for splitting a beam based on its state of polarization, said

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polarizing beam splitter being optically connected to said first output of said planar waveguide optical coupler to receive said first beam, said polarizing beam splitter outputting two polarized portions of said first beam; and

first and second optical detectors that are optically connected to detect a different one of said two polarized portions of said first beam, said first and second optical detectors generating electrical signals in response to respective ones of said two polarized portions of said first beam;

wherein said polarization rotator is located between said planar waveguide optical coupler and said polarizing beam splitter." (emphasis added)

Applicants assert that the combination of Wetherell and Aoki does not teach or suggest "a polarization rotator attached to said first output of said planar waveguide optical coupler" and "a polarizing beam splitter attached to said polarization rotator" as recited in claim 1. (emphasis added) With reference to Wetherell, Fig. 8 does not depict optical elements attached to each other. Specifically, in Fig. 8 of Wetherell the optical coupler (PBS₁) is not attached to the polarization rotators (R_{2x} and R_{2y}) and the polarization rotators (R_{2x} and R_{2y}) are not attached to the polarizing beam splitters (PBS_{2x} and PBS_{2y}). Additionally, Applicants have found no teaching or suggestion in Wetherell that the polarization rotator should be attached to the output of the planar waveguide optical coupler or that the polarizing beam splitter should be attached to the polarization rotator. With reference to Aoki, while Aoki teaches a planar PBS, Aoki does not teach or suggest the attached optical elements as recited in claim 1. Because the combination of Wetherell and Aoki does not teach or suggest "a polarization rotator attached to said first output of said planar waveguide optical coupler" and "a polarizing beam splitter attached to said polarization rotator" as recited in claim 1, a *prima facie* case of obviousness has not been established.

Additionally, claim 1 recites "a planar waveguide optical coupler" and "a polarizing beam splitter" while Aoki is cited for teaching a planar polarizing beam splitter (PBS). That is, claim 1 recites a planar waveguide optical coupler while the Office action cites art teaching a planar polarizing beam splitter. Because claim 1 does not recite a "planar PBS," Applicants are not sure of the relevance of the Aoki reference. Applicants respectfully request clarification on this aspect of the rejection.

Claims 4 – 6

Claims 4 – 6 are dependent on claim 1. Applicants assert that claims 4 – 6 are allowable based on an allowable claim 1.

Independent Claim 8

Independent claim 8 recites a system for optical spectrum analysis that is similar to the system of independent claim 1. Claim 8 has been amended with the same amendments as made to claim 1. Because of the similarities between claims 1 and 8, the remarks made above with reference to claim 1 should be applied also to claim 8. In view of the above remarks, Applicants assert that claim 8 is not rendered obvious from the prior art references.

Claims 12 – 17 and 20

Claims 12 – 17 and 20 are dependent on claim 8. Applicants assert that claims 12 – 17 and 20 are allowable based on an allowable claim 8.

Claim 19

Claim 19 recites “an attenuator connected to attenuate said input signal before said input signal reaches said planar waveguide optical coupler.” Claim 19 is rejected in view of Wetherell and Aoki and further in view of Lange et al. (U.S. Pat. No. 6,748,179, hereinafter Lange). Lange is cited for teaching an attenuator

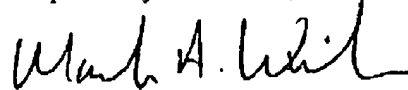
Applicants assert that claim 19 is not rendered obvious from Wetherell and Aoki in view of Lange because Lange does not teach or suggest an attenuator. As stated in the Office action and clearly depicted in Fig. 5 of Lange, Lange discloses a tunable filter. Although Lange discloses a tunable filter, nowhere does Lange disclose an attenuator as recited in claim 19. As is well-known by those skilled in the art, a tunable filter is a wavelength-selective device that passes or rejects a particular band of an optical signal while an attenuator is a wavelength-independent device that reduces the optical energy of an entire optical signal without passing or rejecting any particular band of the optical signal. Therefore, a tunable filter and an attenuator are not equivalent optical elements. The difference between optical attenuators and filters is highlighted by the fact that they are identified as different elements in Fig. 7 of Applicants disclosure and described separately (see Applicants’ specification starting at page 14, line 13). In sum, because Lange does not disclose an attenuator as recited

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in claim 19, Applicants assert that a *prima facie* case of obviousness has not be established.

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein.

Respectfully submitted,



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